Availability and Use of Oxytocin in Health Facilities in Nepal

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Abstract

Introduction: Although maternal mortality is declining over the past 15 years, it is still high in Nepal. Post partum haemorrhage is the leading cause of maternal deaths in Nepal. Oxytocin is one of the emergency drugs, which prevents and manages post partum haemeorrhage, listed in essential drug list, and supplied to hospitals and Primary Health Care centers in Nepal. The study aimed to assess availability, storage condition, prescriber's knowledge and practice of Oxytocin in Nepal.

Methods: A descriptive cross sectional explorative study was conducted in 40 health facilities of 10 districts. Multiple methods – observation, interviews, store records and delivery charts analysis - were used to collect data. The respondents of the study (health facility in-charges, service providers and, store keepers) were interviewed with semi-structured questionnaire. The collected data was entered into MS Excel and analyzed using SPSS version 17.

Results: Oxytocin was available throughout the year in 35.5% of health facilities among them only 8.3% of health facilities stored Oxytocin in refrigerator. In-charges, service providers, were not aware of recommended temperature for Oxytocin storage. Similarly, 40.7% of the service providers used Oxytocin for prevention and management of post partum haemorrhage, 31.9% and 27.4% of service providers used Oxytocin for augmentation and induction respectively.

Conclusion: In some districts, the medicine was not available throughout the year. Majority of service providers were not aware of recommended indications to induction and augmentation. There should be a serious effort to orient the service providers about rational use of Oxytocin and store to maintain the efficacy of the drug.

Keywords: Oxytocin, post-partum hemorrhage.

Introduction

There is a visible decline of maternal mortality over the last three decades in Nepal however, remains still at high level. Reductions in maternal mortality from 539 to 281 per 100,000 live births were noted between the 1996, 2006 and 2008 reports.[1, 2, 3]

Various factors such as low ante natal care (ANC), low level of attendance of delivery by skilled personnel, inadequate emergency obstetric services were among the major contributing factors to high maternal deaths in Nepal.[1] The study carried out in 1998 on maternal morbidity and mortality revealed that post partum hemorrhage (PPH) was underlying cause of about half of all maternal deaths in Nepal. The study also found out that pre-eclampsia and eclampsia were responsible for 14% of all maternal deaths.[4] These findings indicate that maternal deaths in Nepal are

largely due to low level of ANC service utilization and attendance of deliveries by skilled personnel.

Government of Nepal has expressed its commitment to improve maternal survival through the policies and programmes. Implementation of basic emergency obstetric care (BEOC) and comprehensive emergency obstetric care (CEOC), upgrading maternal and child health workers (MCHW) to Auxiliary Nurse Midwife (ANM), financial incentives to mothers and health workers for institutional delivery, free maternal services are some of the examples of these initiatives.[5] Following these programs, service utilization by the mothers is gradually increased. According to Department of Health Services, 33 districts provide CEOC from 44 service facilities and 80 centers provide BEOC in 56 districts.[6] It is targeted that CEOC will be expanded in 60 districts and 80% of Primary Health Care Centres (PHCC). Training of ANMs, as skilled birth attendance, focuses on development of core competencies like active management of third stage of labour and identifies and manages hemorrhage and hypertension during labour. Oxytocin is supplied to the service facilities to prevent and manage the post portum haemorrhage. With these set of actions, Nepal aims to reduce maternal mortality from the current level to 134 per 100,000 live births by the year 2017.[7]

Oxytocin is one of the emergency drugs listed in essential drug list (EDL), and supplied to central, zonal district hospitals and PHCC in Nepal.[8] Other two drugs are Ergometrine and Magnessium Sulphate injection for the use to manage haemorrhage, and hypertension. A joint UNFPA/WHO mission to review the situation found that Oxytocin was only available critical reproductive health medicine at the PHCC level. Additionally, Oxytocin was also available in private pharmacies. The other two critical reproductive health drugs were not available neither at the PHCC nor in the private medical shops.[9]

Appropriate use of Oxytocin remains critical to manage post-partum haemorrhage and reduce maternal mortality and morbidity. In addition to inclusion of Oxytocin in essential drug list, Government of Nepal, in collaboration with external development partners (EDP), has developed several guidelines/protocols for appropriate use of Oxytocin at different service settings.[10, 11, 12, 13] The service providers are given training orientation to these documents. However, compliance to these guidelines while using Oxytocin has not yet been assessed. Although Oxytocin in general is considered as safe medicine, it has potential to produce serious adverse effects, if used irrationally. Hence, the present study was conceived and designed to assess the situation of use of Oxytocin in Nepal.

The study aimed to assess availability, storage condition, prescriber's knowledge and practice of Oxytocin in Nepal.

Methods

A descriptive cross sectional explorative study was carried out in 10 districts. Two districts from each development region representing Terai, Hill and Mountain were selected. Five UNFPA supported program districts (Saptari, Mahottari, Kapilvastu, Dang and Dadeldhura) were purposively selected while other five other districts (Dhankuta, Sindhuli, Kaski, Rolpa and Kailali) were randomly selected. Multiple methods such as observation, interviews, store records and delivery charts analysis were used to collect data.

Data was collected from 40 health facilities (eight district hospitals, 18 Primary Health Care Centers (PHCC), four Regional and Zonal hospitals and 10 private hospitals) from 10 districts. Two PHCCs and one third private hospitals from each district were randomly selected.

Forty health facilities in-charges, 136 service providers and 35 store keepers were interviewed by eight trained enumerators using semi-structured questionnaire in December 15 to 30, 2009 visiting respective health facilities.

There were 70 Auxiliary Nurse Midwife (ANM), 29 Staff Nurses, 25 Doctors and 12 paramedics such as Health Assistants (HA), Auxiliary Health Workers (AHW) and Community Medical Auxiliary (CMA) as service providers.

A total of 153 delivery charts/ records of the last 12 months were randomly selected and analyzed from regional/Zonal Hospital, district hospitals, primary health care centers and private hospitals. Information about indications for use of Oxytocin was obtained from these delivery records.

Data was entered in Excel database and analyzed in SPSS 17.0. Frequency distribution of variables was the main calculation in analysis..

Ethical approval was taken from Institutional Review Board, Institution of Medicine (IOM), Maharajgunj. Similarly, approvals from all the sampled health facilities were obtained before the study. Verbal informed consent was obtained from each respondent.

Results

Availability and storage of Oxytocin in the districts Availability of Oxytocin in the district was assessed by the observation of health facility stores, analysis of records of the store and interviews with the store keepers, in-charges of the institutions, and service providers. Assessment of

availability of Oxytocin was done at the time of study and during the last one fiscal year 2008/09.

Out of 40 health facilities, five private hospitals did not have their own stores. Therefore, these five private hospitals are excluded in analysis. Among 35 health facilities analyzed, Oxytocin was available in 31 (88.5%) facilities. The supply of Oxytocin was observed poor in private hospitals (Table 1).

Table 1: Availability of Oxytocin at the stores of health facilities

Health facilities	At the time of study		Throughout the year	
	n	(%)	n	(%)
Regional/Zonal Hospitals (n=4)	3	(75.0)	2	(50.0)
District hospitals (n=8)	7	(87.5)	2	(28.5)
PHCC (n=18)	17	(94.5)	6	(35.3)
Private Hospitals (n=5)*	4	(80.0)	1	(25.0)
Total (n= 35)	**31**	**(88.5)**	**11**	**(31.4)**

*Out of 10 private hospitals, only 5 hospitals had stores

Availability of Oxytocin, as perceived by in-charges, service providers and store keepers

Less than three fourth of the respondents perceived that Oxytocin was available in the facilities all the time during the last 12 months. Opinions of in-charges and service providers were similar in terms of availability of Oxytocin while there is a slightly different view among the store keepers (Table 2).

Table 2: Perception of respondents about the availability of Oxytocin in the last 12 months

Respondents	Available throughout the year	
	n	(%)
In charges (n=40)	32	(80.0)
Service providers (n=136)	107	(78.6)
Store keepers (n=35)	11	(31.4)
Total (n=211)	**150**	**(71.0)**

Storage of Oxytocin

Out of 35, only 3 (8.6%) health facilities were found to store Oxytocin in refrigerator at the time of study. Service providers and store keepers mentioned that conditions for storing Oxytocin was not discussed in the facilities. Most of them were not aware of recommended temperature for storage of Oxytocin. None of the respondents could recall the protocol document, which recommended storage temperature for Oxytocin.

Prescribers of Oxytocin and their knowledge

In this study, one who ultimately decides to use oxytocin was termed as prescriber. Nearly 88% of nurses used to prescribe Oxytocin in the health facilities independently, while about 66% of doctors and 23% of paramedics reported to prescribe the medicine.

Majority of the responses (86.8%) were indications of Oxytocin use in situation other than management of post partum haemorrhage (PPH). Twenty percent of responses of the service providers indicated the use of Oxytocin in various other situation like incomplete abortion, retention of placenta, post abortion care, head presentation, etc. (Table 3).

Table 3: Indications of Oxytocin use, as perceived by the service providers*

Indication categories	n	(%)
PPH Management and prevention	162	86.8
Augmentation	78	48.5
Induction of labour	38	25.0
Other	35	20.0
*Multiple responses		

Among the service providers, nearly all the doctors indicated Oxytocin for the use of prevention and management of PPH. Similarly, all paramedics mentioned PPH management and prevention as indication to use Oxytocin while four fifth of staff nurses and ANMs related the use of Oxytocin for prevention and management of PPH (Table 4).

Table 4: Indication to use Oxytocin as mentioned by service providers*

Service providers	Indication to use Oxytocin (%)		
	Management of PPH	Augmentation	Induction
Doctors (n=25)	96.0	52.0	52.0
Staff Nurse (n=29)	79.3	51.7	24.1
ANMs (n=70)	84.3	48.6	15.7
Paramedics (n=12)	100.0	33.3	25.0
Total (n=136)	86.8	48.5	25.0

*Multiple responses

Use of Oxytocin in the health facilities

Of the total of 153 delivery chart analyzed, Oxytocin was used in 126 (82.4%) of deliveries. Among them, indications for the use of Oxytocin was recorded in only 104 (82.5%) of delivery records. Side effects and adverse effects were not recorded in any of the charts analyzed.

Indications for the use of Oxytocin in hospital delivery cases

Out of 104 cases, where indications to use Oxytocin was mentioned in the chart, in 81 (77.8 %) cases Oxytocin was used for prevention and management of post partum haemorrhage. In rest of the cases, the medicine was used either for augmentation or for induction of labour (Table 5).

Table 5: Indications for use of Oxytocin in health facilities deliveries (n=104)

Indications	n	(%)
PPH management	81	77.8
Augmentation	10	9.7
Induction	13	12.5

In around 80 percent of delivery cases, Oxytocin was used for prevention and management of post partum haemorrhage, as guided by the national policy. Partographs were not well maintained in the delivery charts.

Use of Oxytocin by individual service providers

Slightly more than one fourth reported to use only after delivery of the baby. Rest of the service providers used Oxytocin at all times – before onset, during delivery and after delivery (Table 6).

Table 6: Time of use of Oxytocin by the service providers (n= 135)

Use of Oxytocin	Categories of service providers			Total
	Doctors	Nurses	Paramedics	
	n=25	n=99	n=11	n=135
	n (%)	n (%)	n (%)	n (%)
Only after delivery of baby	4 (19.0)	33 (50.0)	1 (9.1)	38 (28.1)
Before onset, during and after delivery	21 (81.0)	66 (50.0)	10 (90.9)	97 (71.9)

Among the service providers, nurses more commonly used Oxytocin for management of PPH compared to other service providers. It was found that doctors used Oxytocin for induction in more than half of the times (Table 7).

Table 7: Purpose of using Oxytocin by the service providers (n=135)

Reasons	Categories of service providers			Total
	Doctors	Nurses	Paramedics	
	n=25	n=99	n=11	n=135
	n (%)	n (%)	n (%)	n (%)
PPH prevention and management	7 (28.0)	44 (44.4)	4 (36.3)	55(40.7)
Augmentation	5 (20.0)	38 (38.4)	0 (0)	43(31.9)
Induction	13 (52.0)	17 (17.2)	7 (63.7)	37(27.4)

Discussions

Due to this wide observed discrepancy between availability of the medicine at the time of study and during the last fiscal year 2008/09 it was difficult to find out the real situation of Oxytocin supply interruption in the health facilities. However, it indicates to some extent that Oxytocin is

not available in all health facilities throughout the year. Apparently, it may be indication of inadequate maintenance of store records regarding Oxytocin stock.

The meaning of availability for the service providers and in-charges was available in general for the use. It was not necessary for them that medicine should be available in the store of facility, whereas for the store keepers' perception about the availability was different. For them it was availability in the store of the facility. This difference in perception could be the reason for such a wide disagreement in the results.

The National Medical Standard for Reproductive Health has recommended storing the Oxytocin in refrigerator, if atmosphere temperature is more than 40 degree Celsius.[11] According to the National Standard, Oxytocin can be stored at 40 degree Celsius for two weeks and for one month at 30 degree Celsius. The study revealed that Oxytocin was stored in majority of the health facilities in natural conditions. The drug was stored in room temperature without special arrangement of cooling.

In this study, the use of Oxytocin was found in 126 (82.4%) of deliveries which is quite high as compared to African countries. [14] An African study suggests an increased risk of foetal distress and neonatal morbidity associated with the use of oxytocin during labor.[15] Since delivery services were mostly provided by the nurses even in the facilities where doctors were available, the majority of oxytocin prescribers were Nurses. It indicates that not all doctors were providing delivery services in the health facilities.

The results indicates that majority of service providers had knowledge that Oxytocin is used for prevention and management of PPH. Nearly half of the service providers considered the use of Oxytocin for augmentation and quarter of them for induction of labour. The National Standard has set the indications for induction of labour and augmentation and recommended to use the partograph for augmentation.[10] similarly; Reproductive Health Clinical Protocol has recommended Oxytocin for induction of labour and augmentation.[9]

Hospital delivery charts were not properly documented and maintained in most of the health facilities. Some service providers justified that 'writing details in the charts not taken as important'

Practice to use Oxytocin by the service providers was slightly different from their knowledge. More than half of the responses indicated that Oxytocin should be used for prevention and management of Post-partum hemorrhage and 87% of the responding service providers mentioned PPH management and prevention as an indicator for use of Oxytocin whereas, in practice service providers are using the medicine largely for augmentation and induction of delivery. Furthermore, most of the service providers were not aware of indications to induction and augmentation suggested in the protocol.

Conclusion

Oxytocin, an emergency drug, was not available in some districts throughout the year. Majority of service providers were not aware of recommended indications to induction and augmentation. There should be a serious effort to orient the service providers about rational use of Oxytocin and proper storage to maintain the efficacy.

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Conflict of interest: The authors declare that they have no competing interests.

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